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Flapless application of enamel matrix derivative (EMD) as an adjunct to scaling and root planing – a multicenter RCT

H.F.R. Jentsch[1], M. Roccuzzo[2], L. Marini[3], A. Kasaj[4], R. Fimmers[5], S. Jepsen[5]

[1]Leipzig/Germany, [2]Torino/Italy, [3]Roma/Italy, [4]Mainz/Germany, [5]Bonn/Germany

Background & Aim: The aim of this study was to investigate the potential beneficial effects of enamel matrix derivative (EMD) in combination with scaling and root planing in the treatment of residual pockets.

Methods: The study was conducted as a randomized clinical split mouth trial in a multicenter approach. Thirty three adult patients who had received initial periodontal therapy for generalized periodontitis presented at re-evaluation with at least 2 teeth with residual probing depths ≥ 5 and ≤ 9 mm, bleeding on probing and mobility ≤ 1. Two teeth in each patient were randomized to a standardized re-instrumentation using hand and ultrasonic instruments with (test group) of without (control group) adjunctive flapless administration of EMD (Emdogain®, Straumann, Basel, Switzerland). Clinical parameters probing depth (PD) and bleeding on probing (BOP) were recorded at 6 sites per tooth before re-instrumentation (baseline) and again after 6 and 12 months. Supportive periodontal therapy was provided every three months, however no additional subgingival instrumentation was carried out. Differences between test and control group were analyzed by paired t-test.

Results: No adverse effects of the additional use of EMD were observed during the study. The results were as follows: Baseline PD in test sites was significantly reduced from 6.03 ± 0.8 mm to 4.15 ± 1.1 mm after 6 months and to 4.03 ± 1.3 mm after 12 months. Corresponding values for control sites at baseline, 6 and 12 months were: 5.78 ± 0.9 mm, 4.51 ± 0.9 mm, and 4.69 ± 1.13 mm. Changes in PD were significantly different between groups at 6 and 12 months ($p < 0.0001$). At 6 months 9.1% of test sites and 24.2% of control sites showed BOP, and after 12 months 6.1% vs. 27.2%.

Conclusion: The adjunctive use of EMD during subgingival re-instrumentation of selected sites with residual probing depths after initial non-surgical therapy resulted in enhanced treatment outcomes compared to re-instrumentation alone.